

Claims

- [c1] A portable electronic device having an internal screen for the display of information, the electronic device also having an external screen arranged to receive information from the electronic device and being capable of displaying said information on an electro-optic medium.
- [c2] A portable electronic device according to claim 1 comprising a cellular telephone.
- [c3] A portable electronic device according to claim 1 comprising a personal digital assistant.
- [c4] A portable electronic device according to claim 1 wherein the external screen has a larger number of pixels than the internal screen in at least one dimension.
- [c5] A portable electronic device according to claim 4 wherein the external screen has a larger number of pixels than the internal screen in both dimensions.
- [c6] A portable electronic device according to claim 1 wherein the external screen has a resolution of at least 320 by 240.
- [c7] A portable electronic device according to claim 6 wherein the external screen has a resolution of at least 640 by 480.
- [c8] A portable electronic device according to claim 1 wherein the external screen is from about 2 to about 14 inches in size, measured diagonally.
- [c9] A portable electronic device according to claim 8 wherein the external screen is from about 4 to about 10 inches in size, measured diagonally.
- [c10] A portable electronic device according to claim 1 wherein the external screen has a thickness not greater than about one half inch.
- [c11] A portable electronic device according to claim 10 wherein the external screen has a thickness not greater than about one quarter inch.
- [c12] A portable electronic device according to claim 1 wherein the external screen has a weight not greater than about 6 ounces.

- [c13] A portable electronic device according to claim 1 wherein the external screen is flexible.
- [c14] A portable electronic device according to claim 1 having a housing and wherein the external screen is movable between a retracted position, in which less than the full display area of the external screen is displayed, and an extended position, in which substantially the full display area of the external screen is displayed, the external screen extending a greater distance from the housing in its extended position than in its retracted position.
- [c15] A portable electronic device according to claim 14 wherein, in its retracted position, a major portion of the external screen lies within the housing.
- [c16] A portable electronic device according to claim 14 wherein, in its retracted position, the external screen has the form of a scroll wound around a rotatable member.
- [c17] A portable electronic device according to claim 14 wherein, in its retracted position, the external screen has a folded or serpentine configuration.
- [c18] A portable electronic device according to claim 14 further comprising at least one support member arranged to support the external screen in its extended position.
- [c19] A portable electronic device according to claim 18 wherein the at least one support member is movable between an extended position, in which it is arranged to support the external screen in its extended position, and a retracted position in which it lies closer to the housing than in its extended position.
- [c20] A portable electronic device according to claim 1 wherein the external screen is arranged to draw power from a battery located within the portable electronic device.
- [c21] A portable electronic device according to claim 1 wherein the external screen is provided with at least one manually-operable data input means.

- [c22] A portable electronic device according to claim 21 wherein the data input means comprises at least one push button.
- [c23] A portable electronic device according to claim 21 wherein the data input means comprises a pointing device.
- [c24] A portable electronic device according to claim 1 wherein the portable electronic device is arranged to act as a universal serial bus master and the external screen as a universal serial bus slave.
- [c25] A portable electronic device according to claim 1 which functions as both a cellular telephone and a portable digital assistant.
- [c26] A portable electronic device according to claim 1 wherein the external screen is detachable from the portable electronic device.
- [c27] A portable electronic device according to claim 1 wherein the electro-optic medium comprises an electrophoretic medium.
- [c28] A portable electronic device according to claim 27 wherein the electrophoretic medium is an encapsulated electrophoretic medium.
- [c29] A portable electronic device according to claim 1 wherein the electro-optic medium comprises a rotating bichromal member medium.
- [c30] A portable electronic device according to claim 1 wherein the electro-optic medium comprises an electrochromic medium.
- [c31] A portable electronic device according to claim 1 wherein the electrochromic medium is a nanochromic film comprising an electrode formed at least in part from a semi-conducting metal oxide and a plurality of dye molecules capable of reversible color change attached to the electrode.
- [c32] A cellular telephone having a visual indicator comprising an electro-optic medium having at least two different display states, the electro-optic medium being arranged to change its display state when a call is received by the telephone.

- [c33] A cellular telephone according to claim 32 wherein the electro-optic medium is arranged to change repeatedly between said at least two different display states when a call is received by the telephone.
- [c34] A cellular telephone according to claim 33 wherein the electro-optic medium has at least two modes of changing repeatedly between said at least two different display states when a call is received by the telephone.
- [c35] A cellular telephone according to claim 32 wherein the visual indicator covers an area of at least about 1 cm².
- [c36] A cellular telephone according to claim 32 wherein the visual indicator is provided on the external surface of the cellular telephone.
- [c37] A cellular telephone according to claim 36 wherein the visual indicator covers at least about 5 per cent of the external surface of the cellular telephone.
- [c38] A cellular telephone according to claim 36 wherein the external surface of the cellular telephone comprises at least three separate surfaces and the visual indicator is present on at least two of said separate surfaces.
- [c39] A cellular telephone according to claim 38 having a substantially cuboidal form with a front surface bearing a key pad, an opposed rear surface, and at least two side opposed surfaces and two opposed end surfaces extending between the front and rear surfaces, and wherein the visual indicator is present on the rear surface and an opposed pair of the side and rear surfaces.
- [c40] A cellular telephone according to claim 32 wherein the visual indicator is provided on an external case or other peripheral attachment of the cellular telephone.
- [c41] A cellular telephone according to claim 32 further comprising an audible indicator means for indicating when a call is received by the telephone, and selector means whereby a user may select operation of either the visual indicator means or the audible indicator means when a call is received by the telephone.

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- [c42] A cellular telephone according to claim 32 wherein the electro-optic medium comprises an electrophoretic medium.
- [c43] A cellular telephone according to claim 42 wherein the electrophoretic medium is an encapsulated electrophoretic medium.
- [c44] A cellular telephone according to claim 32 wherein the electro-optic medium comprises a rotating bichromal member medium.
- [c45] A cellular telephone according to claim 32 wherein the electro-optic medium comprises an electrochromic medium.
- [c46] A cellular telephone according to claim 45 wherein the electrochromic medium is a nanochromic film comprising an electrode formed at least in part from a semi-conducting metal oxide and a plurality of dye molecules capable of reversible color change attached to the electrode.
- [c47] An external display for use with a portable electronic device having a data output port, the external display comprising data transmission means for transmitting data from the portable electronic device to the external display, the data transmission means having at least one connector arranged to engage the data output port of the portable electronic device, the external display further comprising an electro-optic medium arranged to display data received by the external display via the data transmission means.
- [c48] An external display according to claim 47 wherein the data transmission means comprises a flexible cable.
- [c49] An external display according to claim 47 provided with at least one manually-operable data input means.
- [c50] An external display according to claim 49 wherein the data input means comprises at least one push button.
- [c51] An external display according to claim 49 wherein the data input means comprises a pointing device.